

## Silwet™ HS-312

### Silwet\* HS-312

#### Description

Silwet HS-312 spreader is a new, hydrolytically stable silicone with a broad pH stability range allowing formulators many options to incorporate it as a cost-effective adjuvant in many in-can pesticide products.

Silwet HS-312 spreader is an excellent candidate to consider for superb spreading performance and extended stability in water-based formulations between pH 3 to pH 12. This product offers excellent performance as a spreader, relative to commercial surfactants, for the effective delivery of many in-can pesticides with lower spray application rates. In addition, Silwet HS-312 spreader is used at much lower rates compared to conventional surfactant adjuvants.

Silwet HS-312 spreader is compatible with many agrochemical components and can therefore be dispersed into water-based agricultural formulations yielding products with excellent storage stability.

#### Key Features and Benefits

- 4-10X more surface spreading than surfactant adjuvants
- Improves spray coverage on crops
- Promotes spray volume reduction
- Compatible with Ag formulations
- Excellent stability with Ag formulations between pH 3-12

#### Typical Physical Properties

Appearance	Yellow to amber liquid
Surface Tension, mN/m (0.1 wt%) <sup>(a)</sup>	26.7
Spreading Diameter, mm	35
Viscosity 25°C, cps (LVT No 3, 100 rpm)	70
Cloud Point, °C	42
Specific Gravity	1.0
pH Stability	3-12

(a) Wilhelmy Plate Method; solutions prepared in 0.005M NaCl

### Product Usage

Silwet HS-312 spreader is a cost-effective spreader that can be used in in-can pesticide products in the 3-12 pH range. It can be added as a component directly to such formulations to provide better spreading during spray application.

The addition levels of Silwet HS-312 spreader are dependent on the level of spreading required in the spray application of the pesticide. A recommended use rate is 5% of the total pesticide formulation, or 0.05% - 0.20% of the tank-mix mixture.

### Processing Recommendations

#### Performance Data

Because the Silwet HS-312 spreader has very low surface tension, the contact angle of spray solutions on leaf surfaces is reduced compared to other surfactant adjuvants. This important property is shown in Figure 1 below, which illustrates Silwet HS-312 spreader having less than 5° contact angle relative to the Octylphenol Ethoxylate containing 10 EO units (OPE-10), having a 31° contact angle. It is also important to note that the lower Silwet HS-312 spreader contact angle is achieved at much lower concentrations compared to the OPE-10 surfactant concentration.

Figure 1: Contact Angles of Spreader Adjuvants



Figure 2 illustrates the excellent wetting properties of the Silwet HS-312 spreader. Compared to OPE-10 at equal concentrations, Silwet HS-312 spreader has 5 times larger spread diameter, which results in improved surface coverage during spray applications. Even at significantly lower concentrations, Silwet HS-312 spreader has better spreading performance than conventional adjuvants, which can potentially lower spray volumes during the application of pesticides to a crop.

Figure 2: Spread Diameter vs. Adjuvant Use

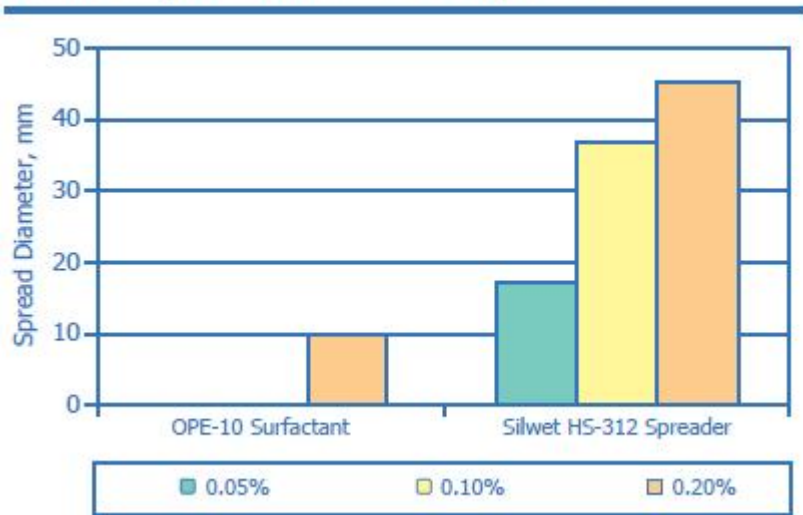


Figure 3 illustrates an improvement in efficacy of a 1% glyphosate treatment on Velvetleaf (*Abutilion theophrasti*), when using Silwet HS-312 spreader. Plants grown indoors were treated at the 2 - 4 leaf stage with 1% glyphosate, using a track sprayer at a relative spray volume of 100 L/ha. Silwet HS-312 spreader was included as an adjuvant at 0.1% rate. Rain (2.5 cm) was applied two hours after treatment. A visual assessment was made at 7 and 14 days after treatment as compared to an untreated control.



**Patent Status**

US and foreign Patent applications pending

Standard copy to come

**Product Safety, Handling and Storage**

Standard copy to come

**Limitations**

Standard copy to come

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